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ANIMAL HEALTH SERVICES IN SUB-SAHARAN AFRICA:
INITIAL EXPERIENCES WITH NEW APPROACHES*

by

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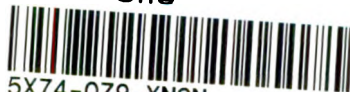
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- * This paper summarizes for ALPAN the recently published Technical Paper No. 134 entitled Animal Health Services in Sub-Saharan Africa: Initial Experiences With Alternative Approaches by the same authors. This summary focuses on the conclusions and policy recommendations. Background information and most basic data are provided in the full paper. The views expressed in this paper represent those of the authors and should not be attributed to the World Bank or its affiliates.

This One



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Background

1. Efficient and reliable animal health services constitute an essential prerequisite to livestock development in Sub-Saharan Africa (SSA). First, losses due to livestock mortality in SSA are approaching US\$2 billion per year, and losses due to decreased growth, fertility and work output as a result of disease are thought to be about as high (Annex 1). Second, diseases deter many SSA smallholder farmers from upgrading their stock to higher productive genotypes or even from keeping livestock altogether. Third, the prevalence of disease vectors such as the tsetse fly and ticks precludes the adequate use of approximately 10 million square kilometers of land in SSA by livestock. Fourth, the prevalence of certain diseases causes the lucrative EEC export markets -- which offer preferential prices for developing countries -- to remain closed to many countries of SSA.
2. However, over the last decades, the quality of the animal health services has deteriorated. The rapid expansion of public sector veterinary staff -- the dominant supplier of veterinary services -- at the expense of funding for means of support and operating costs, forced drastic cutbacks in field operations, and staff became office-bound and their morale plummeted. Several studies (Anteneh, 1983, 1985; Leonard, 1984; de Haan and Nissen, 1985) documented this decline. At the same time, the traditional leaders, who earlier imposed on their herders' groups the discipline of sanitary control and vaccination, lost authority under new post-independence administrative arrangements and a power vacuum developed at field level.
3. On the other hand, the demand for veterinary services has increased sharply. First, traditional herders have become

more aware of the benefits of veterinary care, especially since the Rinderpest outbreaks of the early 1980s, and are willing to pay for effective and reliable veterinary services. Second, livestock ownership has become more diversified, as crop farmers, government officials, and traders see livestock as one of the more profitable investment opportunities. These new livestock owners recognize the importance of disease control in reducing the risk to their investment in livestock. However, they have no experience in livestock raising and therefore depend much more on outside assistance for veterinary care than traditional pastoralists do. Third, in the past decade close to 20 million cattle have moved into the humid disease-infested savannahs from the less disease-prone semi arid rangelands, and thus the demand for veterinary services in the higher rainfall areas of SSA has increased dramatically. Fourth, livestock prices have kept ahead of the cost of the main drugs used and therefore have made veterinary care more affordable. This can stimulate further intensification of production, with more valuable cross-bred livestock pushing up the demand for veterinary services and justifying the higher expenditures involved.

4. Faced with dwindling resources and a growing demand, public authorities and donor agencies began looking for alternative ways of organizing and financing animal health care. Thus, during the early eighties an active dialogue developed between the heads of SSA livestock services and representatives of donor agencies (Bujumbura, 1984; Blantyre, 1984; Berlin, 1986). Subsequently, several projects with alternative forms of animal health services were initiated, amounting to approximately US\$500 million in foreign commitments over the period 1985-1989.
5. Donor support has been mainly provided by (i) the European

Development Fund (EDF), largely through its funding of the OAU/IBAR-sponsored Pan African Rinderpest Campaign (PARC), which linked support for Rinderpest vaccinations to the implementation of policy reforms to make the vaccination campaigns self-sustaining and to alleviate some of the more serious distortions in the sector; (ii) Technical Cooperation Service of the Federal Republic of Germany (GTZ), which focused on the development of basic animal health care systems at the grass-roots level; (iii) Aid and Cooperation Fund of France (FAC), also through the financing of basic animal health care systems and through the provision of technical assistance to a number of national projects, financed by multilateral donor institutions; and (iv) the World Bank, which over the last five years has devoted an increased share (up to 40 percent) of livestock funding to improving animal health, combining structural reforms in the privatization of animal health services and retrenchment of government services, with investment activities. Further important support has been provided by the Overseas Development Association of the United Kingdom (ODA), the International Fund for Agricultural Development (IFAD) and the African Development Bank (ADB).

6. This paper outlines the types of reforms introduced in animal health services over the past decade, summarizes past experiences, provides a preliminary assessment of their impact, and indicates what lessons need to be taken into account in future policy adjustments and project investments. The discussion concentrates on World Bank-supported initiatives, because of the easier accessibility of the data to the authors.

Reforms in SSA Livestock Services: Basic Principles

7. Animal health care services can be classified as private or public goods, depending on who receives the benefits (Leonard, 1984). At one extreme are purely private goods, which (i) only benefit the animal owner receiving the service; (ii) can be enjoyed exclusively by that owner (the exclusion principle); and (iii) when provided, exclude somebody else from that service at that particular time (the rival principle). For example, clinical treatment for a wound or worms would qualify as a pure private good because (i) the treatment benefits only the owner of that animal; (ii) nobody else benefits; and (iii) the treatment excludes other farmers from the services of the veterinarian at that time. In contrast, services like quarantine and meat inspection are pure public goods as they do not directly benefit the owner of the animal and do not exclude other producers from that service.

8. As a general rule, the higher the private benefit, the more justified it is to have the beneficiary pay for the service directly and to transfer the service to the private sector. Public sector management of private good services is justified if economies of scale are an important consideration or if sophisticated expertise or equipment is needed. In such cases, the services should be financed through direct payment from the beneficiaries and not from general revenue. Pure public good services should be managed by the public sector (although subcontracting to private operators is always possible) and financed by the general public revenue. Activities such as meat inspection approximate a purely public service and should therefore be financed and managed by public resources. The principal animal health tasks in SSA and their degree of public/private interest are listed in Table 1.

Table 1. Management and funding of common livestock services

	Management		Beneficiaries	Payment	Treasury
	Private	Public			
Drug distribution	++	-	++	-	-
Clinical interventions	++	-	++	-	-
AI - semen production	++	+	++	-	-
AI - insemination	++	-	++	-	-
Dips	++	+	++	-	-
Vaccinations					
Compulsory	-	++	+	++	++
Voluntary	++	+	++	-	-
FMD ^{a/}	-	++	+	++	++
Tsetse control	-	++	+	++	++
Diagnostic support	+	++	+	+	+
Veterinary surveillance	+	++	-	++	++
Veterinary research	+	++	+	++	++
Quarantine	-	++	+	++	++
Drug quality control	-	++	-	++	++
Food hygiene/inspection	-	++	-	++	++
Policy/planning	-	++	-	++	++
Extension	+	++	+	++	++

++ Obligatory or highly justified

+ Possible

- Not justified or undesirable because of potential conflict of interest situations.

^{a/} Foot and mouth disease vaccination in meat-exporting countries; in other countries, it is considered mostly private.

9. The reforms most widely adopted in animal health care in SSA since the early 1980s fall into the following categories:

- (i) increase in the degree of cost recovery for veterinary drugs, vaccinations, other inputs, and veterinary interventions;
- (ii) reorganization of public services to correct the imbalance between staff and operating means and to strengthen these services in animal health control, policy planning, and livestock research and extension;
- (iii) liberalization of veterinary drug import and distribution; and
- (iv) transfer of responsibility for animal health care to private veterinarians, middle-level technicians, specially trained herder representatives (auxiliaries), and even directly to the herders.

10. The basic objective behind all four reforms was -- and still is -- to create, through cost recovery and liberalization, the appropriate environment for the private sector to take over some of the veterinary tasks formerly carried out as public services. Once the government has delegated the "privatizable" veterinary tasks to the private sector, it can concentrate and improve on those tasks that need to remain in the public domain. To ensure that public agencies can carry out these tasks effectively, the reform package includes institutional adjustments that provide for adequate and continuous funding for their operations.

An Overview of the Initial Experiences

11. Probably the most important results of the policy dialogue over the last five to six years is the growing realization of African decision makers of the need for adjustment and their better appreciation of opportunities for private animal health care. While the early proposals on this subject (Bujumbura, 1984) were met with considerable skepticism and stressed government control of any privatization effort, more recent meetings (Feldafing, 1990) with decision makers recommend much more clearly that the government withdraw from "privatizable" veterinary tasks. This change in attitude augurs well for the future.

12. However, not all policy adjustments have met with the same enthusiasm, nor has the reaction been the same at all staff levels. For example, the policy of cost recovery for drugs and noncompulsory vaccinations was widely accepted, but not cost recovery for compulsory vaccination. As for the response to privatization at different staff levels, a subjective assessment seems to indicate that acceptance has been greatest among senior policy makers and at the producers' level. Many middle-level technicians have also demonstrated a keen interest in the possibilities of privatization. The response was more uneven among professional and lower-level support staff who seem to perceive the package of policy adjustments as a threat to their individual interests. The remainder of the report provides information on individual policy reforms.

Cost Recovery for Services Rendered

13. The introduction of a system of full cost recovery for publicly provided services is essential to protect emerging private initiatives from unfair competition. Furthermore,

cost recovery is crucial to enable governments to reduce their financial burden, make the service sustainable and independent of outside (international) financing, and ensure that the service is efficiently used by the beneficiary. Cost recovery becomes more justified as the private benefit of the services increases.

14. Cost recovery for public sector supplied veterinary services is probably the reform most widely introduced in SSA over the past decade. This comes from a growing awareness that the producer is quite willing to pay for good services and that additional revenue must be found for these services from the beneficiaries themselves since national budgets throughout SSA are under the pressure of financial austerity. Cost recovery introduced under Bank-funded projects did not cause the demand for veterinary services to decline. Producers were quite willing to pay a beneficiary contribution.
15. On the contrary, the total availability of the services seems to improve and poorer people seem to gain greater access to the services when cost recovery was introduced. Leonard (1984) already showed that when staff began charging for their curative visits, the work output increased significantly, inequality in distribution was reduced by at least one-half, and the more fully commercialized veterinary staff graduated their charges according to the recipient's ability to pay. Similar results were also found in the Bank/IFAD/ADF funded livestock project in the Central African Republic (CAR), where the introduction of full pricing led to improved drug availability, especially among the poor, who purchased, on average, 50% more drugs per animal than the wealthier livestock producers.
16. A partial contribution is nowadays charged to beneficiaries in most SSA countries for voluntary vaccinations against less

contagious diseases of little threat to the national herd (theiluric diseases, anthrax, blackleg and pasteurellosis, FMD in non-meat-exporting countries, and all poultry vaccinations). This contribution is about US\$0.05-US\$0.25 per vaccination, which covers the vaccine and some of the other variable costs, but not staff salaries and other overheads. The recovery of these costs would double the charge. In order to gradually arrive at full cost recovery, several Bank-funded projects have included specific cost-monitoring exercises and an annual adjustment of the fee in the program. It is critical to arrive as soon as possible at full cost recovery for those non-compulsory vaccinations.

17. Most compulsory vaccinations (Rinderpest, CBPP and FMD in the meat-exporting countries of SSA) were traditionally financed fully out of general taxes and provided free to the producer. However, the private benefits of these vaccinations seem significant enough to ask for a direct contribution from producers and now a number of countries have introduced partial cost recovery. Although incomplete, initial data on 10 countries seem to corroborate the effectiveness of this approach, as no depressing effect could be found from cost recovery: Rinderpest vaccination coverage in the five countries that had introduced a vaccination fee was 58%, against 60% in those countries that had maintained a free vaccination policy. These findings are not too surprising as sociological research in several countries has shown that producers are quite willing to pay for good services and that even where the vaccinations are officially free the producer is (illicitly) made to pay. Although the Bank recommends some degree of cost recovery for compulsory vaccinations, it generally acknowledges that other reforms (cost recovery for voluntary vaccinations and all clinical interventions and withdrawal of "privatizable tasks") are of higher priority and should be pursued first.

18. Cattle dips to treat ticks and tick-borne diseases (especially East Coast fever in East Africa), produce predominantly private benefits. If participation is low, however, the population of ticks resistant to the acaricide may increase and pose a threat to all farmers, including those participating in the program. There is thus a public element in a dipping program. While dipping is economic and essential in intensive production systems using exotic crosses, its economic justification in extensive production systems is doubtful. A study in the CAR livestock project in 1986 indicated that an average investment of US\$15 per head (which equals the annual revenue per animal) and a recurrent annual charge of US\$2 per head would be necessary to recover all costs, including depreciation. This was more than the herders were willing to pay, and the program was discontinued. In the Ituri Project in Zaire, newly established dips had an ex-post economic rate of return (ERR) of 0 to 15% because of the high investment costs, and the treatment produced little change in productivity. Studies undertaken during the preparation of the Kenya Animal Health Project in 1986 indicate that an increase of Ksh 0.30 to Ksh 1.50 per animal per dipping would be necessary to make the dips self-financing, and the mortality figures would have to drop from 10 to 8 percent per year to justify this fee increase. This reduction is probably feasible in the heavily infested East Coast Fever areas, but not elsewhere.
19. Cost recovery for dipping services has been disappointing in terms of regularity and numbers dipped, but these results may be due in part to an increase in hand spraying. In Kenya, a dipping fee created a disincentive for regular and widespread dipping, which was not overcome by making the dipping compulsory (Sandford, 1983). Meanwhile, Zimbabwe authorities argue that their strictly enforced compulsory dipping program is a success because it is free. However, in specific Kenyan

projects, with good services, farmers have shown clearly to be willing to pay for dipping services--especially for crossbred animals. A fixed fee per head to cover all dippings over a longer period seems to produce better revenues and herder participation than a system of payment per dipping. This was the case in the Central Province in Kenya, where revenues doubled after a lump sum for four months per animal was introduced; also, the leakage of funds diminished once dip attendants were no longer required to handle small amounts of money continuously. With several new technologies emerging (direct application of acaricides with long residual effects, vaccines) and because of disappointments in profitability and management of dips, the best strategy seems to be to use for the time being simpler means (knapsack sprayers), until these more modern control techniques become available. This is the current strategy of the World Bank, which has stopped financing the construction of new dips, although several Bank-financed projects are still involved in rehabilitating existing facilities with emphasis on cost recovery and the privatization of the management.

20. Although the public good element of artificial insemination (AI) is quite small, cost recovery for this service has not yet reached a reasonable level. This is partly because in most of SSA AI has only recently been introduced. During the first years, the cost per farmer of a daily AI run, with only a handful of farmers participating, is excessive, and some initial subsidy is unavoidable while demand builds up. However, it has proved difficult to phase out the subsidy after the initial phase. According to calculations in Kenya -- the only SSA country in which the World Bank finances AI -- in 1986, the real cost per insemination varied from Ksh 20 to Ksh 250, depending on the livestock density of the region, but the government charged only Ksh 4 per insemination.

Farmers have obviously been willing to pay more than Ksh 4 as private veterinarians were recently charging Ksh 30 per insemination. But in many regions the real cost price through government services was still substantially higher than the farmer was willing to pay. Consequently, a profitable, self-standing AI service is not likely to materialize in the medium term, except in areas of high density and intensive production where transport costs are shared with fixed clinical runs and on some private "elite" farms that are breeding bulls to be sold for natural mating.

21. Transfer of the revenues generated by the cost recovery to a special account or revolving fund, under the responsibility of the livestock services, is frequently sought by the departments and donors alike. Through the establishment of such a Livestock Development Fund (LDF): (i) livestock services would become independent from erratic central budgeting processes and cumbersome systems of financial control; (ii) staff are better motivated to collect and users to pay the fee, because there is a direct return in the form of more means to operate and better services rendered; and (iii) livestock services would be assured of long term financial sustainability. LDFs have been included in a number of recently approved bank-funded projects. The supplementation of the LDF with the revenue of special earmarked taxes, although included in a number of earlier projects, is generally opposed by finance ministries and institutions which are macro-economic oriented such as the International Monetary Fund. They argue that because there is no longer a direct link between services rendered and revenue generated, it is more efficient to transfer the revenues of such taxes to the central treasury where they can be allocated across all sectors.

22. A decentralization of the decision making on the use of funds

generated by cost recovery, for example, to the provincial level has been argued (World Bank, 1987) because it would: (i) help improve the utilization of resources since local staff generally have a better idea of the needs of their unit than some remote planner at headquarters; (ii) encourage wider community participation in development activities; and (iii) help bring down administrative costs, inasmuch as any shift to a higher level of revenue collection increases the administrative load, and the savings could be used for other productive purposes.

23. At the same time, the efficiency gains expected from decentralization need to be balanced against the possibility of leakage. Experience has shown that recovery tends to be low (30-50%) and that revolving funds become rapidly depleted under a decentralized system of administration (i.e., at the level of the vaccination yard, dip, or veterinary post). This is clearly shown in many externally financed projects by the dismal performance of veterinary pharmacies operated by livestock posts. Therefore it seems prudent to keep administrative functions at an intermediate (i.e., provincial) level where adequate control can be maintained and ample motivation provided for local participation. As more emphasis is placed on cost recovery, project designers need to give increasing attention to the administrative management and control of cost recovery revenues.
24. LDFs now exist in six SSA countries. Most of the LDFs operate at the national level, except in Cameroon, which has created three provincial LDFs. Thus far, experience with these LDFs has been positive: revenues are in the range of US\$100,000-500,000 per year, and some LDFs have become important operating tools of livestock services in the countries concerned. The accounts have by and large been certified by external audits. However, LDFs have not yet had

an opportunity to operate after external financing (and external protection) has ended. Where that happens, it is likely that the political pressure to reintegrate the revenues into the eternally cash-strapped Treasury will be stronger, although the need for these funds will also be much greater.

Public Sector Reforms in Animal Health Care Services

25. One of the main reasons for the declining performance of veterinary services in SSA during the 1960s and 1970s was the rapid increase in personnel costs at the expense of nonsalary recurrent funding (Anteneh, 1983, 1985; de Haan and Nissen, 1985). From 1960 to 1976, veterinary service personnel costs in West Africa increased at an average rate of 7% per year, whereas nonstaff recurrent expenditure increased by only 3% per year. As a result, the salary:nonsalary ratio, one of the predominant indicators of the efficiency of a livestock service, dropped from 64:36 in 1960 to 75:25 in 1976 in West Africa, and from an excellent 40:60 in 1974 to a poor 70:30 in 1981 in Kenya. In contrast, in Southern Africa the ratio remained close to the 50:50 optimum over the same period.
26. In 1984, some countries in SSA began introducing institutional reforms to address this problem. The primary purpose of these reform programs has been to stabilize or reduce staff in government services, to establish LDFs, and to increase direct government contributions to complement nonsalary operating funds. The effect of these programs has been assessed by comparing staffing and budget data from 20 countries (of which 8 had started to implement institutional reform programs during 1985-1989) with data on the same countries in earlier studies.
27. The results of this study indicate that, while the growth of

the staff numbers in some countries have levelled off, they have in aggregate continued to grow over the past decade. The total number of livestock service staff in the 20 countries surveyed jumped from just over 13,000 staff in the mid-1970s to more than 25,000 in the second half of the 1980s. As a result, the average number of Veterinary Livestock Units (VLUs) per veterinarian has declined from almost 100,000 in the mid-1970s to just over 50,000 today, and the number of VLUs per middle- and lower-level veterinary assistant has dropped from 10,000 in the mid-1970s to about 7,000 now (Table 2). Overall growth has been the same in the different regions, although in West Africa growth has been particularly strong in the professional category, whereas in Eastern and Southern Africa staff growth has occurred mainly in the support category.

Table 2. Government Professional and Support Staff Ratios (VLU per staff) in the Different SSA Regions

<u>Region</u>	<u>000 VLUs per Person</u>			
	<u>Professional Staff</u>		<u>Support Staff</u>	
	<u>Mid-1970s</u>	<u>Mid-1980s</u>	<u>Mid-70s</u>	<u>Mid-'80s</u>
Western Africa	95	30	7	4
Eastern & Southern Africa	120	80	14	6

Source: de Haan and Bekure (1991).

28. Some of the key conclusions regarding staffing are that:

- (i) the average staff level exceeds recommended norms (200,000 VLUs per professional staff and 12,000 per support staff) for disease prevention in extensive production systems.

- (ii) the overall professional/support staff ratio exceeds, especially in West Africa, the generally accepted standards of about 1:20 for extensive systems and 1:10 for intensive systems.
 - (iii) substantial differences persist between countries, ranging from 300,000 VLU per professional staff in Ethiopia and Somalia to 20,000 VLU in Côte d'Ivoire, Ghana, and Senegal; the number of VLUs per support staff varies from a high of 13,000 to a low of 900.
 - (iv) the state of a country's economy (measured by the level of per capita income) seems to be an important determinant of the amount of staff resources allocated to the sector; countries with a per capita GDP of more than US\$800 had denser coverage in professional and support staff than the countries below the US\$800 per capita income level.
29. Some of the key trends regarding the budgets of 16 livestock services for which data were available are:
- (i) the recurrent financial budget of these services grew at about the same rate as the staff numbers. The growth was relatively strong in West Africa, but was less pronounced in East and Southern Africa, although differences in exchange rate adjustments over this period might have affected these changes. Budget increases generally fell below inflation rates.
 - (ii) differences between individual countries are significant, however, budgets of the livestock services in the wealthier countries (per capita GDP of more than US\$800), increased by an average of 16 percent, compared with only 1 percent in the poorer countries.

(iii) as a result of these tendencies, the salary/nonsalary budget ratio remained about the same, although again it varied greatly from one country to another. In West Africa, of the ten countries for which complete data were available, three countries improved, but four remained in the very poor 85:15 ratio range, where it becomes practically impossible to provide effective service. In Eastern and Southern Africa the average ratio worsened somewhat but is still satisfactory. However, this average is mainly based on the good budget allocations of Zimbabwe and Kenya and does not include some of the countries with less favorable budget allocations.

30. The erosion of the purchasing power of the individual salaries of the staff and the decline in their nonsalary operating funds in many countries continue to lead to poorly motivated staff and inadequate resources to satisfy sharply increased demands. Thus there is still a need for reforms and for the government to disengage from some of its tasks. Since countries vary greatly also in this regard, it is important to prepare institutional and public expenditure analyses and reorganization plans on an individual country basis, as already recommended earlier (de Haan and Nissen, 1985).

The Liberalisation of Drug and Vaccine Import and Distribution

(i) Drug imports

31. Drug imports were, until recently, handled by parastatals in most SSA countries. The majority of these drug companies were poorly managed and developed serious financial problems because of their high overhead and the below-cost pricing of the drugs, frequently forced upon them by central ministries under the mistaken impression that the producer would not pay

the full price. As a result of these restrictive policies, only a part of the demand was satisfied through official channels and an active parallel (black) market emerged outside the control of the government.

32. Over the last decade, several SSA countries have liberalized both imports and distribution. Chabeuf (1990) reports that of the 29 countries he surveyed, 18 had liberal imports and 22 liberal local distribution. This liberalization seems to have had a positive effect on drug use. Although confounded by climate and price differences and illegal trade between countries, this study's data show that between 1985 and 1988, for example, the average consumption of drugs in countries with a government monopoly was US\$0.14 per VLU per year, whereas the consumption in countries that had adopted a freer trade policy was US\$0.46 per VLU per year.
33. However, external donors continue to finance parastatal drug import and distribution companies, in particular their rehabilitation. The rationale put forward is that (i) the private sector is not interested in servicing the remote areas, (ii) parastatals are better able to handle the donations in veterinary drugs, and (iii) parastatals are needed to generate funds for the government livestock services. In such externally funded projects, privatization would be sought, once the parastatal is rehabilitated. However, in almost all Bank projects reviewed, full rehabilitation seems always "just around the corner" but never still fully achieved, and none of the parastatals under rehabilitation in Bank (and other donor) funding have yet been privatized.
34. One might thus question the wisdom of continued support for parastatal drug companies. Experience shows that the impact of parastatal companies is very limited. In the few

countries with only private importers, distribution to the remoter areas is as good or better than it is under any parastatal company. Furthermore, the private sector tends to lose interest in participating when a public company is already involved, as implied by the lower consumption in countries that have maintained a parastatal company besides the private importers in comparison with those that relied entirely on the private sector for their imports. Even in the semi-arid pastoral rangelands where the density of livestock and humans is low, it is difficult to justify keeping the government in charge of drug distribution. Distribution through local herders' associations under the umbrella of a national federation, as done in the CAR (Annex 2) provides a far superior alternative, and perhaps this ought to be considered as the future model in these countries. Even in those cases where the public sector needs to be involved in drug distribution, it should be in support of the private sector by distributing drugs in remote areas, and should not move into import or wholesale trade. Furthermore, rather than maintaining costly parastatals, it could be envisioned to subcontract drug distribution in remote areas to private distributors, compensating them with a special subsidy for the extra cost involved.

35. Although many African countries have been moving toward freer foreign exchange markets, currency restrictions in several countries are still preventing drugs from becoming widely available. A common approach to this problem is to have outside donors refinance the revolving funds, but this is only a temporary solution and drug supply comes to a halt the moment the foreign exchange source dries up. When foreign exchange controls are lifted problems are not over yet, as normally there is an initial period of high inflation, which makes it difficult to refinance revolving funds. Where the average turn around time for drugs is longer than six months,

the purchasing power value of the local currency during this period can drop dramatically allowing only a small part of the original stock to be replenished. The problem is especially acute in public sector agencies or projects where price changes are generally slow and well behind the pace of inflation. In such circumstances, countries need a very dynamic price mechanism with a high margin to achieve a continuous alignment between sale price of drugs and the exchange rate.

(ii) Vaccine production

36. The growing public sector involvement in vaccine production is of considerable concern. The number of vaccine production laboratories in SSA has virtually doubled in the past 10 years and all major and most smaller livestock-producing countries now have their own vaccine production laboratories. This trend accelerated in the mid-1980s following the 1982 Rinderpest outbreak and the resulting scramble for scarce Rinderpest vaccine. In the wake of this strong expansion, however, there is a large excess capacity in the region. Furthermore, the vaccines used for the most common diseases (Rinderpest, common poultry diseases like New Castle disease) are produced more economically in established large-scale laboratories. Except for two private laboratories in SSA, all laboratories are government-owned and usually under the supervision of the livestock department. Because of the existing excess capacity, practically all laboratories have operating deficits, and what should be self-financing operations depend on subsidies from the government, frequently even above the direct payment of salaries from the treasury. Production costs of about US\$0.10 per dose are calculated, with a sales price ranging from US\$0.03 to US\$0.05 per dose.
37. This proliferation of national vaccine laboratories is not

justified, especially now that emergency buffer stocks of Rinderpest vaccine are being maintained in selected SSA laboratories under the Pan African Rinderpest Campaign (PARC). The frequently heard argument that local operations reduce foreign exchange needs is not very strong as the process requires a high share of imported supplies. Regional cooperation, and consolidation of the many small national laboratories into larger, more specialized regional laboratories needs therefore to be pursued and once consolidated, privatization sought of those larger laboratories. Any plan for the construction of new laboratories, or the expansion of existing ones, seems only justified if it would attract private interest. Most existing national laboratories are too small to attract such attention, and--like parastatal drug import and distribution companies--none in SSA have yet been privatized. Reforms have been limited to reducing the most obvious distortions, for example, by organizing vaccine production in separate self-contained and self-financing units that charge real prices.

(iii) Drug distribution

38. Until recently, only the staff of veterinary services were allowed to distribute drugs, and this is still the case in some countries. Such restrictions were fully justified in the first half of the century, when drugs were not charged to the producers, were expensive in relation to livestock prices, contained ingredients toxic to humans, and improper use produced serious side effects. In the past three decades, however, mass production techniques have reduced drug costs, and research has eliminated many unwanted side effects. On the other hand, the deteriorating quality of government services in the field, strongly restricted drug distribution, and as a result, a flourishing black market

developed in many SSA countries. With the aid of external support, many countries have therefore introduced more liberal distribution, although like in the other policy thrusts, progress is partial. Several countries maintain an unjustified discriminatory system, allowing government technicians to distribute and apply prescription drugs, but prohibiting private technicians to do so.

39. An important issue concerns the drug types that can be purchased without prescription. Proponents of a liberal policy argue that it is necessary to include the crucial drugs on the non-prescription list, to interest non-professionals operating private veterinary care and to limit the much more dangerous black market, now rampant throughout SSA. Opponents of free distribution point to the danger of drug resistance as a result of incorrect dosage by laymen and the competition these laymen would pose to self-employed professional veterinarians. Preliminary experience seems to justify a liberal policy, as it seems to reduce black marketeering and adulteration. In the CAR, where drugs have become more available through the Federation Nationale d' Eleveurs Centrafricaine (FNEC) (Annex 2), the share of drugs purchased by herders on the black market fell dramatically. Furthermore, surveys showed that the majority of the herders and lower-level technicians are capable of handling most drugs very properly.

Privatization of Clinical Interventions

40. Privatization of veterinary services has been at the forefront of all recent discussions on animal health policies. There are a number of compelling reasons for such a move. Economically, veterinary activities like clinical interventions and voluntary vaccinations are exclusively private in nature and have a clientele that is willing to pay

for the services, as has amply been demonstrated. Financially, public services cannot maintain a full scale of services, and need to concentrate on those services, which government has to fulfill, i.e. the services with a high "public good" element. The large number of veterinarians and livestock technicians graduating in SSA each year who cannot be absorbed by the public sector creates social problems. Privatization is a high-profile component of most recent Bank-funded livestock operations. In most of these projects, privatization is not restricted to the development of professional veterinary practices, but more importantly, involves the transfer of public sector tasks to other levels (middle-level technicians, veterinary auxiliaries, and producers). The approaches used to date in these different categories are outlined in the following paragraphs.

(i) Professional veterinarians

41. Self-employed veterinary professionals, common in other parts of the world, are still rare in SSA. At present, they are operating only in the main urban centers, in the commercial livestock industries, and in some high potential areas. Private veterinary care has been -- and in many instances still is -- stifled by (a) unfair competition from public services which dispense subsidized treatments and often use paraveterinary staff to compete with would-be professional private veterinarians; (b) a preference for -- and sometimes an obligation to employ -- new graduates in the civil service; (c) the uncertain availability of drugs and equipment; and (d) the perceived poor financial prospects for private veterinarians, especially in the pastoral and smallholder areas.
42. These disincentives are now being addressed in the context of macro-economic adjustment programs and recently approved

macro-economic adjustment programs and recently approved livestock projects, and special incentives are being established to improve profitability. Income projections for private veterinarians in Bank staff appraisal reports vary from US\$4,000 to US\$35,000 per year. Such projections seem to be somewhat optimistic, and earnings from a private practice are likely to be below the income earned by a government veterinarian in many parts of Africa. This should not, however, deter professional veterinarians from considering self-employment, as it will be impossible to fully absorb veterinary graduates (the numbers of graduate veterinarians in SSA increases by 10-20% per year) in government posts (which, applying average public sector requirements, would have already about 2,000 professional veterinarians available for self employment). Privatization can provide the impetus needed to improve the quality of veterinary services. The marginal profitability does mean, however, that in the professional practices preference needs to be given to areas with higher potential, such as those in which dairy production is more intensive, those around urban centers with a growing poultry industry, and those with some commercial ranching. In addition, private professional veterinarians could -- in some countries, they already do -- play a central role in the import and wholesale distribution of drugs. In the lower potential areas, veterinary care needs to be delegated to middle- and lower-level technicians or to producers themselves, ideally under the supervision of private professional veterinarians. Although basic animal health care has been successfully introduced at the middle and lower levels, the basic animal health care system in SSA has not yet been adequately linked up with private professional veterinarians. This is a critical issue that needs more attention in future project design.

43. Although some issues still need to be resolved, interest in

privatization is rising in the changing policy climate in SSA, and in the face of frozen recruitment and retrenchments of public servants in many countries. In a number of surveys carried out for the preparation of the project for Bank funding, most veterinarians were positive about getting into private practice. Another encouraging development is the creation and rehabilitation of national associations of veterinarians (NAV). Such professional associations are nongovernmental organizations that represent the interests of the veterinary profession and can be highly effective interlocutors in these discussions. NAVs, however, are not yet sufficiently strong to give business management training and administrative support to private veterinarians and would require technical assistance until their membership fees can support such activities.

44. Special incentives to encourage the establishment of private veterinary practices included in externally funded projects cover:

(a) financial support in the form of credit, sometimes supplemented by grants in kind, for those leaving government service;

(b) partial salary payment for a limited period in those areas where livestock density is too low to provide an adequate income;

(c) subcontracting of public sector services at remunerative rates to self-employed veterinarians;

(d) transfer of facilities and transport equipment to the private operator who would then pay only for their maintenance and operation;

government employees to test the feasibility of private practice; and

(f) the free or subsidized provision of office and laboratory facilities combined with part-time employment, which combines (c) and (d) above. Introduction of one or a combination of these incentives started in mid-1987, and it is too early to tell whether the incentives are strong enough to encourage the development of private veterinary practices.

45. Experience thus far suggests that the following two issues merit specific attention when designing a privatization program:

Balance between the public and private sector. This balance is of concern in almost all externally funded projects as they seek to stimulate privatization, and at the same time to improve the performance of public sector tasks. The latter is necessary in part because the tasks are important in themselves and need to be strengthened, but also because it is vital to interest the government in the overall project. However, the investment in equipment, the financing of allowances, and the funding of clinical services gives government veterinarians strong advantages over any newly established private ones and discourages government veterinarians from leaving the public sector.

Full cost recovery by government services. There is an innate resistance in the public sector to charge real costs for the services it provides. Still, it is essential to do so if the private practitioner is to be assured of an adequate income. Arguments are frequently put forward that cost recovery can only be gradually introduced, because of the necessity to improve services first to a level where producers would be willing to pay for them. However, where

producers would be willing to pay for them. However, where farmers are quite willing to pay for veterinary service, valuable opportunities to develop sustainable services were missed. Therefore, a comprehensive approach, which will eliminate all unfair competition from the public service seems to be a prerequisite for the success of professional private veterinary practice.

(ii) Other groups

46. While progress in self employment of professional veterinarians has been minimal, considerable progress has been gained with lower-level skills, notably (a) private middle-level technicians with one to four years of technical training after primary training for the sedentary production systems; and (b) producer representatives (auxiliaries) with varying educational backgrounds specially trained for the pastoral production systems. These non-professionals are better equipped to serve the extensive production systems in particular, because:

- o their income aspirations are below the level a professional expects and can be met in most production systems;
- o communication between the non-professional animal health worker and the producer -- frequently from the same ethnic group -- is generally better than between the professional veterinarian and the producer, who are frequently from different backgrounds; and
- o a large proportion (80-90%) of the veterinary interventions required in the extensive production systems are simple and can be done by less qualified persons, especially if they are properly supervised.

47. Although private non-professional animal health care is a fairly recent phenomenon in SSA, it is now being tested in at least 10 countries involving 8 million head of livestock; it is also expected to be introduced in much broader scope in another 10 countries. Non-professional systems seem to be providing a viable alternative to the poorly functioning public services. Middle-level technicians have been successfully employed in non-professional animal health care in sedentary livestock production systems in West and Central Africa (see Annex 2), while satisfactorily operating veterinary auxiliaries are a feature of pastoral production systems in the Sahel and East Africa.
48. Empirical data on the quality of the service provided by non-professional agents are scarce. Surveys in the Central African Republic indicated that in pastoral systems about 90% of the herders-auxiliaries there used drugs against internal parasites correctly, 85% of the producers diagnosed trypanosomiasis correctly, and 75% of the herders calculated the dosage within 10% of the recommended amounts. Vaccinations against anthrax and blackleg were carried out properly as well. These figures compare favorably with surveys on the level of expertise of government field staff in some countries, which frequently show lower scores for the proper disease diagnosis and correct dosage administration. Experience in other countries corroborate the auxiliaries' expertise in diagnosing disease and judging dosage. However, more research and monitoring will obviously be required to adequately assess levels of expertise, especially with auxiliaries recruited from populations relatively new to livestock raising. Experience with veterinary services for the work-oxen of crop farmers suggests that the farming population involved is much less skilled in diagnosing and treating animal disease and that it was difficult to recruit auxiliaries sufficiently familiar with livestock raising.

This difference in skills between pastoral and mixed farmers suggests a two-pronged approach, following a rather liberal drug distribution policy for pastoral producer, using their representatives as the main channel, and a more restricted policy with mixed farmers new to livestock raising, using higher-qualified technicians as the main agents.

49. Lessons drawn from past experience in the organization of non-professional animal health care are:

Organization. Non-professional animal health care is not sustainable unless the auxiliary is integrated into a group or association at the grass roots level and there is a reliable supply system for equipment and drugs at the national level. The integration in producers groups is recommendable also in a broader context, as many groups now go beyond animal health care and take responsibility in other tasks such as water point maintenance and range management. Animal health care then becomes the catalyst for group formation in better management of communal resources. The input supply side seems to be the weakest link. Input supply for the auxiliaries is generally handled by the project or is left to a parastatal company, thus seriously endangering post-project sustainability. Fully self-financing and independent input supply institutions need to be developed to respond adequately to otherwise well-established non-professional animal health care.

Selection and training. It is important for the veterinary auxiliary to come from the community he or she is to serve, particularly in the pastoral production systems, and to maintain close ties with his community during the training period. Selection on the basis of literacy rather than origin and representation, as frequently done, means that the auxiliary does not have the basis to fall back on later and

results in disappointing performance. Maintaining contact with the home front is also important when deciding on the course format. Short (3-6 days), frequently repeated (every 6 months) programs, involving not only the auxiliary, but also the traditional hierarchy is much more successful than long, continuous training periods without any contact with their group of origin.

Remuneration. Although it is important to integrate the auxiliary into an association, experience shows that there is a danger that the auxiliary will become a poorly remunerated social worker. When that happens, the interest of the auxiliaries dies quickly. Consequently, a combination of a small retainer paid by the association and a margin on the sale of drugs seems to be essential to maintain the auxiliaries' interest.

Government involvement. Non-professional animal health care should develop as a private activity, and the government's role should be restricted to technical support/training and ex-post control and should exclude day-to-day management. Day-to-day supervision should be entrusted to private veterinarians, although this is one of the key links still missing in the system.

Funding and assistance. Establishing a non-professional animal health care system is a location-specific, protracted, and incremental task without a high funding requirement. Most external donors (including the World Bank) and national governments are not as well equipped to handle such a task as NGOs, which therefore should be encouraged to assist in the development of pastoral associations and basic animal health care systems.

(iii) Groups and special animal health tasks

50. Group responsibility for animal health tasks ranges from the management of all health tasks and artificial insemination, to the simpler tasks of managing dips and the veterinary stores. Experience with group management of dips has been mixed. The turnover in group-managed dips was in most projects higher than in government-managed ones, although access to the dip sometimes becomes an inequitable political tool in the hands of the president of the group. Experience in Kenya showed that communities performed rather poorly in maintaining the required acaricide level of the dipping fluid, resulting in a much higher incidence of tick borne diseases in areas of community controlled dips than in areas with government controlled dips (Leonard 1984). The present approach in Bank-funded projects is to transfer the dips to the community but to improve government capability in monitoring the dip operation.
51. Success in managing veterinary stores also depends on the control and quality of management. The overall financial management of these seems better in the more hierarchically structured and more tightly controlled pastoral societies than in crop farmers' groups. Group veterinary pharmacies appear to be operating satisfactorily in a number of Bank-funded projects, and the associations' revolving funds are now also used for additional functions besides the veterinary pharmacy. Post-project sustainability has been disappointing, however, and considerable efforts are necessary to establish improved internal control systems and to strengthen the role of the auxiliary in directly managing the revolving fund.
52. In summary, while the initial experiences with private non-professional animal health care have been positive, especially when integrated into producers' groups, some

important steps still need to be taken. The countries of SSA should now focus on establishing a reliable input supply system, involve private veterinarians in the management of private non-professional health care, clarify the relationship between the official livestock service and the non-professional animal health care system, and ensure quality control and financial sustainability.

Conclusions and Policy Implications

53. The measures recently introduced in animal health care in SSA are still too new to provide a full and objective assessment of their impact. However, on the basis of progress to date, the following policies can be recommended.

(i) Imports and distribution of veterinary pharmaceuticals can be transferred to the private sector. The private sector also needs to be involved in vaccine production, although privatization here needs to be preceded by consolidation of SSA's many small laboratories into larger regional units.

(ii) Full cost recovery for government services needs to be introduced as an essential prerequisite for any private involvement in veterinary services. Cost recovery has been widely introduced in SSA over the past decade and has yielded satisfactory results for clinical and prophylactic interventions, and with no immediately apparent negative impact on equity. It has been less successful in the more marginal activities like cattle dipping and artificial insemination.

(iii) Further measures are needed to redress the ratio between salary and non-salary operating costs of government services. While a number of countries have made progress in improving the operational efficiency of their public

services, services in many countries still operate under salary/nonsalary ratios which do not allow efficient functioning.

(iv) In many African countries, the development of private non-professional veterinary services as part of producers' organizations would be the first step to privatization. Their representatives (auxiliaries), if properly trained, have been shown to be capable of carrying out most treatments correctly, and group formation around animal health has been an important precursor to other cooperative activities.

(v) The use of self-employed veterinarians has up till now not been successful and needs to be pursued more vigorously. They need to form the critical link between the government service and the private auxiliaries, and the present vacuum created by the missing link may endanger the success of the auxiliary-based system.

54. Thus, while the overall initial results are encouraging, any definite claim of success would be premature, and at this stage it is essential to continuously monitor the unfolding impact of these reform measures so that the conclusions of this report can be empirically tested. It seems that if this course is continued -- supplemented with other technologies such as simple feed improvements, small stock development, smallholder cattle fattening and dairy operations, which have all shown some degree of promise in ongoing livestock projects -- livestock should be able to play a catalytic role in SSA's agricultural development and alleviate the huge meat and milk deficit projected for SSA in the 21st century.

ANNEX 1

ANIMAL HEALTH SERVICES IN SUB-SAHARAN AFRICA INITIAL
EXPERIENCES WITH NEW APPROACHES

AN ESTIMATE OF LOSSES CAUSED BY DISEASES

1. The losses caused by animal health problems can be classified into direct and indirect losses. Direct losses are mainly caused by mortality while indirect losses are caused by decreased growth, fertility and work output (morbidity losses). Estimates of direct losses are in the order of US\$ 2 billion per year. The importance of indirect losses is more difficult to estimate, but are generally thought to be of the same order of magnitude. The breakdown of the estimated direct losses per class of animals is as follows:

<u>Category</u>	<u>Total Population</u> (million head)	<u>Av. Mortality</u> (%)	<u>Av. Price</u> (US\$)	<u>Total Loss</u> (million US\$)
<u>Cattle</u>				
Calves	40	20	40	320
Adults	120	5	200	1200
<u>Sheep & Goats</u>				
Lambs/kids	80	25	10	200
Adults	140	10	20	280
<u>Pigs</u>				
All	10	10	30	30
<u>Poultry</u>				
Village	400	20	2	160
Intensive	100	5	3	15
<u>Total</u>				2205

The total of US\$ 2 billion concurs with figures provided by FAO.

2. There is a lack of quantitative information on the relative importance of the different diseases. Disease surveys carried out in specific regions, frequently in the framework of a project, show an overwhelming importance of internal parasites especially as a cause of young stock mortality. Furthermore they show, slightly less but still very important, losses caused by diseases transmitted by external parasites (ticks, e.g. East Coast Fever, Anaplasmosis, etc. especially in East and Southern Africa). The ANNEX 1 losses resulting from the major contagious diseases Rinderpest and Contagious Bovine Pleuro-Pneumonia (CPBB), are relatively insignificant, because of the reasonable level of immunity resulting from national annual vaccination campaigns, resuscitated after the major outbreaks in 1982-1983. The major cost concerning these diseases consist in maintaining immunity at the level required to prevent a repetition of such general outbreaks. The vaccination against Rinderpest is therefore the main--and sometimes only--task of SSA's livestock services. Under most of Africa's extensive production systems, Foot and Mouth Disease (FMD) does not result in major economic losses and therefore does not warrant a generalized vaccination coverage. Blanket vaccination might be justified in intensive dairy production and for those countries (presently Botswana, Zimbabwe and provisionally Madagascar) which have a preferential access for meat and meat products to the European Economic Community. Trypanosomiasis or animal sleeping sickness, transmitted by the tsetse fly, precludes raising of trypano-sensitive breeds (90% of SSA's cattle population and 70% of SSA's small ruminant population) in tsetse infested areas, unless maintained permanently on a drug regime. Peste de Petit Ruminant (PPR) is a major killer of sheep and goats in the humid zones of West and Central Africa. The use of Tissue Culture Rinderpest (TCR) vaccine, which has been found effective against PPR, is increasingly being used. New Castle Disease, coccidiosis and fowl pox are the major killer diseases of poultry. Vaccines are available for all diseases. A number of countries (Burkina Faso, Senegal, Côte d'Ivoire, etc.) have started vaccinations of village poultry with good effect.

ANNEX 2

**ANIMAL HEALTH SERVICES IN SUB-SAHARAN AFRICA INITIAL
EXPERIENCES WITH NEW APPROACHES**

LIST OF IMPORTANT PROJECTS AIMED AT PRIVATIZATION OF VETERINARY CARE

<u>Country</u>	<u>Donor(s)</u>	<u>Main Focus</u>
Burkina	FAC	Village poultry/small ruminant vaccinations
Central African Rep.	IDA/IFAD/EEC/FAC	Drug distribution and herders training through national herders federation.
Cameroon	IBRD/IFAD	Private import and distribution systems, private practices for professional and mid-level technicians
Chad	GTZ	Veterinary auxiliaries
Chad	EEC/IDA/FAC/ADB	Privatization with professional veterinarians, mid-level technicians and herders' associations (auxiliaries)
Chad	FAC	Privatization with auxiliaries in cotton region
Côte d'Ivoire	CCCE/GTZ/FAC	Village pharmacies and private auxiliaries
Ethiopia	IDA	Service cooperatives and auxiliaries.
Guinea (Conakry)	IDA/CCCE/FAC	Private imports, and privatization at various levels.

Kenya	IDA/IFAD/OPEC	Private professional practices, privatization of dips; cost recovery.
Nigeria	IBRD/EEC	Studies
Mali	IDA	Herder associations, auxiliaries
Senegal (Eastern Senegal)	IDA	Herder and village associations
Somalia (Animal Health)	IDA/GTZ	Veterinary auxiliaries
Somalia (Central Rangelands)	IDA	Cost recovery measures
Sudan (Western Savannah)	IDA	Privatization with professional practitioners and auxiliaries
Uganda		De facto privatization, External support in advanced stage of planning.
Zaire (Ituri)	IDA/FAC/CIDA	Regional herder associations and auxiliaries.

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